No 110 Ch

116 South Front

A

Passed March 1828

Dissertation

on

Colica Pictonum.

by

Robert Morton

of

Philad.a

Jan 11th. 1828

It is well known that exposure to the fumes of lead, handling its different preparations, drinking wines, and other liquids in which its salts are held in solution, will as certainly produce disease, as when these salts are taken in quantity into the stomach.

This disease was noticed and described as early as the seventh century, though its cause was not then understood. after this it was supposed to be the effect of acidity, for many years. About the close of the seventeenth century it was ascertained to be caused by the salts of lead, used in the preparation of wines to correct their acidity; and about the middle of the last century Sir George Baker shewed that the disease was occasioned by the employment of utensils or vessels of lead in the manufacture of these liquids as well as by the litharge and sugar of lead used in sweetening them: This disease has received several appellations.

Colica Pictonum or Colic of Poictou also called Devon=shire colic is thus named in consequence of its former

prevalence in the province of Poictou in France, and Devonshire in England. In these provinces it was formerly attributed to the extensive use of acid wines and ciders but at present it is generally considered to have prevailed in consequence of the custom then resorted to, of dissolving a quantity of the salts of lead in these liquids for the purpose of correcting their acidity and restraining fermentation. Artisans in whose occupations the preparations of lead are much employed, suffer greatly from this disease, and hence its more general name of Painters Colic.

Though lead in some form is now considered as the ordinary source of this species of Colic, it is also alleged to proceed from other causes.

The use of crude wines and acidulated drinks is by some considered as a cause of this disease, while their injurious effects are attributed by others to the lead dissolved in them, and they assert that in all cases of the disease from this cause, lead will be found to

have been employed in some way in their manufacture and to exist in them in solution.

Suppressed perspiration from exposure to cold and moist=ure is said occasionally to have produced the disease.

An affection similar in some of its symptoms to Colica Pictonum may be produced by an injury of the spine, from a blow or other violence: the symptoms in which it resembles the ordinary form of the disease are, paralysis of the lower extremeties, and constipation of the bowels, both resulting from the compression of the spinal mar=row, interrupting the nervous communication, between the spinal nerves and intestines, and lower extremeties

Moseley considers the disease as endemial to the West Indies and epidemic in some other parts of the world besides being occasioned by lead.

Under the specific name of Rachialgia, nosologists have included the several varieties of this colic, as occasioned by the causes mentioned: Viz;

The poison of lead;

Acid drinks

Exposure to cold and damp

Injury of the spinal marrow.

For all practical purposes lead introduced into the system through the stomach lungs or skin may be considered as the sole cause of Colica Pictonum. When supposed to proceed from acid drinks or exposure to cold, the treatment would not materially vary from that necessary in the first case; and when occasioned by injury of the spine the local nature of the complaint will point out the necessary variations in the treatment.

Pathologists have not decided on the manner in which lead produces its poisonous effects on the system — whether it is by an impression on the skin, influencing the stomach and bowels sympathetically, or by being taken into the circulation and acting directly on the parts affected: Hunter says the blood can receive and retain extraneous matter capable of destroying the solids and altering their chemical properties, and gives in illustration the case of a

man who had been paralytic from the poison of lead, whose muscles were found after death to have lost their natural colour, but instead of being ligamentous as happens in common paralysis, they were opaque, exactly resembling parts steeped in a solution of Goulard's extract of lead: he concludes from this that lead had been carried along by the blood even into the muscles themselves.

If lead produces its deleterious effects on the constitution by being received into the circulation, it is most probably first taken into the stomach, and from thence by means of the lymphatics conveyed into the blood. In this way liquids impregnated with lead must be considered to operate, and indeed through this channel, the fumes or effluvia of this metal, can be conceived to act by supposing them to become entangled in the saliva and in this way conveyed into the stomach

But beside the stomach, the skin and lungs have been considered as channels through which extraneous matter may be introduced into the circulation: the admittance of

lead into the system has therefore been explained in this way where these organs have been most exposed to its influence; as where the disease has been occasioned by wearing clothes impregnated with the effluvia of lead, by exposure to the fumes of this metal, or by the external application of lead, in the form of lotions or plasters: the disease from these external applications is of very rare occurrence, though these are in general use: where it does occur it may depend on idiosyncrasy

Colica Pictonum has been occasioned by apparently very slight exposures to its cause: thus, sleeping in newly painted rooms has produced the disease with a fatal termination. the same exposure has brought on paralysis with loss of speech in six hours - it has been occasioned by wearing the clothes of those who had been employed among lead: by an habitual residence in rooms containing printed or coloured paper in the manufacture of which lead had been used; and in this city it has been occasioned by drinking äerated water, and acid

liquors which had been standing for a night in leaden tubes.

While some persons are thus easily affected by the poison of lead, others will resist its influence during exposure for a long series of years: this difference depends on a peculiarity of constitution in some instances and in others to a neglect of, or attention to personal cleanliness. Dr. Good relates the case of a printer, in whom the precaution of washing the hands before meals prevented the recurrence of the disease for six or seven years: the patient had had previously several attacks, and on neglecting this precaution, the disease returned and proved fatal.

The symptoms of Colica Pictonum are a fixed pain at the pit of the stomach sickness, with violent retching obstinate constipation of the bowels, a twisting or vermicular sensation in the small intestines, cramps in the muscles of the shoulders, back or legs; the pulse is but little affected at first, becoming smaller and quicker as the disease advances. When neglected or improperly treated,

these symptoms are followed by paralytic affections with wasting and contraction of the affected muscles; and in violent cases death takes place preceded by deafness, blindness delirium, chorea or epilepsy.

The pain at the pit of the stomach continues from the commencement to the termination of the attack, in a greater or less degree, never entirely leaving this position. it is at first dull, but increases in violence as the disease advances; it also becomes more extended, affecting the back, loins and rectum, and frequently extending to the arms and thighs. the pain is so violent as to occasion great soreness of the external muscles of the abdomen, so much so, that the patient finds the weight of the bed clothes insupportable, and sometimes it is so severe, as to induce fainting.

In some cases where the pain is violent in the stomach the lower bowels and external muscles are comparatively free from it and while these are affected, the stomach is partially relieved; the pain alternating between these parts.

The sickness of stomach increases with the pain: the vomit-
-ing soon becomes violent, and slime or greenish bile is
thrown up: this discharge is often followed by temporary
relief; but so long as the pain is severe, the same secretion
continues and again excites vomiting.
The obstinate constipation of the bowels, constitutes a
very prominent symptom in this colic, resisting for a
long time all efforts to overcome it. It has been supposed
to arise from a loss of the contractile power of a portion of
the intestines which occasions distension, by an accumula-
-tion of faeces and flatus at this part, and is followed
by spasmodic contractions of those portions of the in-
-testines not immediately affected by the lead. We may
thus account for the constant tendency to constipation,
in this disease; for in colic of a purely spasmodic char-
acter, when the constipation is once overcome, the disease
is mostly removed; but in Colica Pictonum the accu-
-mulations in the intestines are continually recurring,
unless prevented by aperient medicines.

Notwithstanding the severity of the pain the pulse is not affected at first; in a few days it becomes quicker, (though this does not always happen,) and then it has been questioned whether the acceleration is not the effect of medicines taken to procure relief, rather than of the disease itself; During this development of the attack the mind of the patient is affected and his spirits depressed.

The paralysis is one of the most formidable symptoms of Painters colic: it is peculiar in its manner of affecting the patient, being more partial in its operation than the palsy induced by compression of the brain or Spinal marrow: Most commonly the arms, from the insertion of the deltoid muscle, to the extremeties of the fingers are affected; or the extensor muscles only, the flexors retaining their full power of action. The legs also are sometimes affected, but less frequently than the arms. The wasting of the paralyzed muscles, is most con=spicuous in the hands. Sometimes the paralysis

subsides and is succeeded by an increase of pain in the bowels; this declines in its turn, and is followed by a return of the paralysis - the pain and palsy thus alter=nating for a long time. These paralytic affections are sometimes accompanied by swelling of the joints of the affected parts.

Where the disease is to terminate favourably, copious discharges from the bowels, frequently in the form of scybala, take place, sweats break out, sometimes ac=companied with an efflorescence, and the patient is relieved.

There is frequently a gouty affection of the feet and toes - like true gout, the pain is greatest during the night, and it is remarked, that as this increases, the pain of the bowels is relieved.

In Colica Pictonum there is mostly an unnatural flatness of the abdomen: without any tympanitic distention: this peculiarity and the enduring char=acter of the pain, even when its cause is unknown

may distinguish this disease from common flatulent colic. It may be distinguished from bilious colic, by the high vascular action, and voluminous pulse, in the latter disease, which are not observed in the former. The duration of Colica Pictonum is very uncertain, de=pending on the violence of the attack and the treat=ment adopted. When it occurs in a mild form, and is properly treated, five or six days will be required for a cure: where the attack is violent, or the treat=ment improper, it will continue for as many weeks or months.

In treating this disease in its early stage, two indications must be fulfilled; To allay the pain and vomiting, and overcome the constipation of the bowels.

Notwithstanding the smallness of the pulse, bleeding will generally be required; it is the most certain means of mitigating spasmodic pain and of preventing the in=flammation which this spasm has a tendency to induce. With the same view, leeches to abdomen, followed by a

blister may be required, where venesection has been carried as far as the case admits of.

Where the pain is great and vomiting incessant, these symptoms must be first relieved, as without this, medicines cannot be retained on the stomach; but where they are not very violent, or if the stomach will retain the medicines given, cathartics may be resorted to at once, and by over-coming the constipation of the bowels, all the other symptoms will be mitigated - but even under these favourable circumstances cathartics will be assisted in their operation by combining them with opiates.

When from the violence of the symptoms, cathartics cannot be given, opiates will be required to relieve pain and tranquillize the stomach; these are frequently rejected, when given by the mouth, and are then to be used as clysters: A drachm of laudanum mingled with four or five ounces of warm olive oil or mucilage, forms the common injection. Instead of the laudanum, the hyoscyamus has been employed; either the seeds or extract

is
or
cas
bo
of
in
Th
ope
=do
A
on
=m
ap
A
th
sp
fo
un
to

is used, in quantities of four or five grains of the former, or ten of the latter. The hyoscyamus displays in many cases aperient as well as anodyne powers, and thus answers both indications at the same time. A strong decoction of poppy heads as an enema, has also been highly useful in allaying pain.

These opiate enemata will be powerfully assisted in their operation, by the warm bath, warm fomentations to the abdomen and copious injections of warm water.

A large blister over the abdomen often succeeds, not only in allaying pain and obviating internal inflammation, but in obtaining evacuations from the bowels after opiates and purgatives have failed.

Alum is much used in Germany in the treatment of this disease; some practitioners have regarded it as a specific in it; it is given in doses of fifteen grains every four, five or six hours - in these doses, it is said to produce unvarying beneficial results, the third dose seldom failing to mitigate pain, and sometimes entirely removing it.

When the pain and vomiting are relieved, the constipation of the bowels must be obviated. In employing purgatives with this view, those of a drastic nature should be avoided, as, when they fail in moving the bowels, they produce in=flammation and thereby very much increase the danger. Castor oil, is generally first resorted to, to open the bowels in this species of colic - it is usually combined with laudanum; - the efficacy of the oil is much increased by an addition of the oil of turpentine, in the proportion of a drachm of the latter, to an ounce of the former.

Calomel will generally be found the best aperient medicine in this state of the stomach and bowels; it is sometimes rejected by the stomach, but from its gravity and the small=ness of the dose, it is less likely to be thrown up, than other medicines: it is given in doses of three or four grains, every four hours.

In administering calomel, opium may be combined with it with advantage; it allays the irritability of the stomach, thereby tending to prevent the rejection of the calomel, and

by overcoming the spasmodic action of the bowels it indirectly assists its operation. But independent of these advantages, opium has been found to be a corrective of the poisonous effects of lead: it is said, that "whatever deleterious property the superacetate of lead may possess, it is entirely removed by a judicious mixture with opium" and that "this beneficial influence of opium on lead should induce us to employ it, and that very freely as an antidote in every case, and especially in Colica Pictonum". A grain of opium may be combined with each dose of the calomel, given every four hours.

As calomel is slow in its operation, it should be assisted by some brisker cathartic; where the stomach will bear it a solution of the sulphate of magnesia in an infusion of Senna is to be preferred; should this be rejected, the super tartrate of Potassa may be tried as less likely to be thrown up. These purgative medicines will be assisted in their operation by aperient enemata: a pint of the infusion of Senna containing a drachm of jalap is one of the best distending

the bowels with warm water, or inducing relaxation of the spasm by enemata containing a solution of Tartarized antimony or Ipecacuanha; or by the infusion or fumes of tobacco has been successful in overcoming this costive state of the bowels. Tartarized antimony when employed for this purpose is dissolved to the amount of twenty or thirty grains in a pint of water. When Ipecacuanha is preferred, a drachm is suspended in mucilage or water. The to=
=bacco injection is prepared by infusing a drachm of the leaves of tobacco in a pint of water, one half of which is to be used at once.

After the bowels have been opened, Moseley recommends a solution of three drachms of sulphate of Zinc, and one drachm of Alum, in a pint of water. a table-spoonful of this solution is given every six or eight hours, while the pain is considerable, keeping the bowels open with castor oil if necessary and using opiates if the griping become severe. This medicine generally acts as an emetic, some=
=times as a purgative; if neither nausea or catharsis is

produced, the dose is increased until one of these effects takes place: this mode of treatment, is asserted by its author to be so successful as to prevent the occurrence of paralysis, in all cases where it was resorted to, however severe the attack. The constipation of the bowels being overcome, there is a mitigation of the other symptoms, and a proper use of laxatives and opiates with pure air and exercise will gen=
=erally complete the cure.

Where paralytic affections have taken place, the cure will be much more tedious, weeks and months often elapsing before this is effected: sometimes the paralysis resists all treatment.

For the removal of this sequel of the disease, several metal=
=lic preparations have been employed - the most important of these are the Nitrate of Silver and the preparations of mercury.

The Nitrate of Silver has been employed in these cases with undoubted success, and affections of considerable standing have yielded to its influence. Four or five grains

are given during the day; and this quantity gradually in-
-creased to four or five grains three times a day: it has
been carried to the extent of six grains every six hours, and
with entire success. In these doses nitrate of silver proves
laxative, so much so that opium may be necessary to restrain
its action on the bowels.

Mercury was first recommended in colica pictonum, by Dr.
Butterbuck, on the ground of its producing effects on the
system of an opposite character to those of lead. These effects
are strikingly in contrast— When the system is under the in-
-fluence of lead, the arterial action is lessened, the secretions
of the liver and alimentary canal diminished, the bowels
constipated and the irritability of the muscular fibre,
decreased: When the mercurial impression is produced, the
reverse takes place in each of these respects.

Mercury is used internally and in the form of frictions to the
parts diseased. a slight affection of the gums should be
maintained, till the muscles of the affected part, recover
their power of action: the dull griping pain, generally gives

way when a salivation is established.

Of late, the nux vomica has been employed by the French physicians, in the treatment of partial paralysis and it is said with success. One of the ordinary effects of this medicine, is to produce a tetanic state of the muscles; in cases of partial palsy however, it is asserted to have an elective action, the affected muscles only, being brought under its influence, and that this is in proportion to the loss of sensation and motion of the part. However this may be, the nux vomica is known to be a powerful tonic in proper doses, and hence might prove serviceable in paralytic affections: the dose is four or five grains of the powdered nut given during the day.

Local applications are preferred by some practitioners to internal remedies in the treatment of palsy from lead; blisters and warm pumping on the affected joints (which are to be kept supported by splints) are recommended by Dr. Gregory as constituting the only efficient system of treatment: warm bathing and aperient medicines are to

be
Ve
al
Sho
me
ne
the
pro
It
ina
par
be
and
he
ulc
ease
Thi
in p
its a

be conjoined with these local means.

Where splints and bandages are used to support the paralysed parts, they should be removed once in the twenty-four hours, the parts subjected to friction, and the joints and muscles exercised as much as possible: Where this is neglected, the joints become stiff, and the muscles of the part, which are not affected by the disease, become powerless from want of exercise.

It is important in all cases where the disease has been induced by handling the preparations of lead, or where the patient has been exposed to its fumes, that his clothes should be removed immediately after he is placed under treatment, and as soon as the violence of the disease will admit of it, he should be thoroughly washed; the clothes of such patients retain enough of the poison, not only to maintain the disease in themselves, but to cause it in others.

This attention to personal cleanliness is of very great importance in preventing the disease in those whose trades expose them to its attacks: before dismissing patients of this class, the importance

of such attention should be explained - washing the hands before meals, should be particularly insisted on, and frequent changes of clothes recommended.

Those who have suffered from Painter's Colic, are liable for a long time to returns of the disease, and any new exposure to its cause, will almost certainly bring on an attack; friction over the spine, with stimulating liniment, attention to the state of the bowels, tonic medicines, fresh air and exercise are the means recommended for preventing the return of the complaint.

It has been mentioned that acescent liquids become contaminated, by oxydizing the leaden vessels used in their manufacture; or in which they may be kept for use; to prevent this Prout and Vauqueline have proposed that an equal portion of tin should be united with the lead used in making such vessels; the Salts of tin are not poisonous, and its oxide having a closer affinity for acids, than the oxides of lead, would combine with them to the exclusion of the latter.

The presence of lead in liquids, may be detected on the addition of Sulphuric acid: a white precipitate is thrown

do
eit
hy
in

Th
fo
tha
the
and
of o
of th
to a

down which is sulphate of lead. The hydro-sulphuric acid either in its gaseous form or dissolved in water, throws down the hydro-sulphate of lead, from any liquid containing this metal in solution. the precipitate is in the form of a black powder.

This concludes what I have to say respecting Colica Pictonum: - for its triteness and imperfection, I can only plead in excuse that the one is unavoidable where the student depends for the mass of his information on authors already well known; and the other cannot but be anticipated in the production of one who can scarcely claim to have attained the threshold of that science, one application of which he has thus ventured to describe.